DISTRIBUTION OF TABANIDAE AT THE CHAKWENGA GAME RESERVE, REPUBLIC OF ZAMBIA

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ABSTRACT. Total numbers of tabanids collected by CO_2-baited Malaise traps from 3 vegetation types (headwater grassland or "dambo," riverine grassland, miombo woodland) at the Chakwenga Game Reserve, Republic of Zambia, during the period, November, 1974–October, 1975, were significantly different; the greatest numbers were recorded from the woodland and the least from the riverine grassland. In all vegetation types, abundance of tabanids coincided with the warm rainy season, November–April; all species recorded during the study were represented in each type.

INTRODUCTION. Gojmerac and Devenport (1971) found significant variations in the distribution of 5 species of *Chrysops* collected by netting from forest, marsh and meadow at the Kegonsa State Park, Madison, Wisconsin, U.S.A. with the majority of the *Chrysops* collected from the forest.

Previous collections of tabanids during the period, November, 1973–October, 1974, at the Chakwenga Game Reserve by Malaise traps baited with CO_2 were restricted to the miombo woodland (Okiwelu 1975a, 1975b). An attempt was made during November, 1974–October, 1975 to study the distribution of *Tabanus* and *Haematopota* species in the miombo woodland and adjoining valley grasslands.

EXPERIMENTAL AREA. Location, physical features, climate of the area and main characteristics of the dominant vegetation type of the miombo woodland have been described (Okiwelu, 1975a). The miombo of the Chakwenga Game Reserve is interspersed with valley grasslands associated with the network of rivers and streams, tributaries of the Zambezi and Lusemfwa. The miombo woodland at the field station is bounded on the north and east by the Mwambashi river and associated with this river are two types of valley grassland: headwater grassland or "dambo" and riverine grassland (Fig. 1). The dambo vegetation is a moderately dense mat of grasses, sedges and perennial herbs, 50–75 cm high with flowering culms 1–1.6 m high. The grasses are perennial cushion-like or tussocky bunch-grasses with *Loudetia simplex* as the characteristic species. Associated common genera include *Acroceras, Aristida, Eriochrysis, Trachypogon.* The riverine grassland consists of dense tussock grasses in the swampy parts, caespitose grasses cover extensive areas of the seasonally inundated plain and a dense entangled herb mat covers the water meadow. The perimeter zone is a narrow belt of *Hyparrhenia* grasses of many different species. The riverine plain is characterized by *Loudetia simplex.* Associated grasses occur in colonies with a mosaic distribution; common genera are *Echinochloa, Oryza, Themeda, Tristachya.*

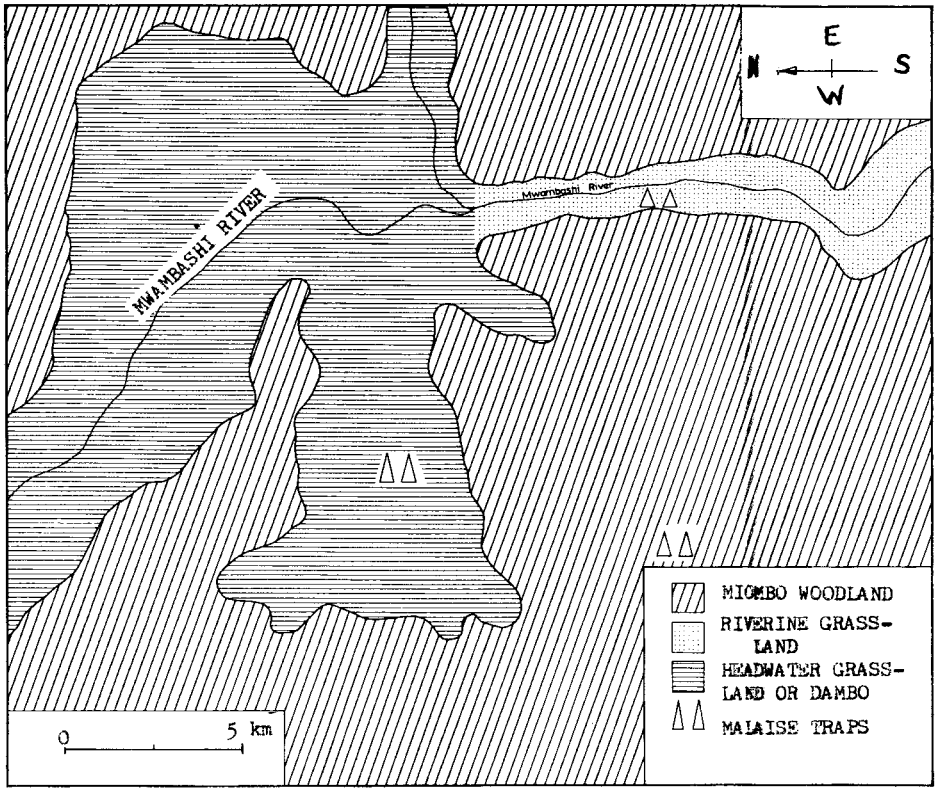

Fig. 1. Locations of Malaise traps in different vegetation types at the Chakwenga Game Reserve.

METHOD. Two Malaise traps baited with CO_2 flowing at the rate of 2 liters per min were placed approximately 300 m apart in each of the 3 vegetation types (Fig. 1). Collections were made daily at 0600, 0900, 1200, 1500 and 1800 hr.

RESULTS AND DISCUSSION. Total numbers of tabanids collected from the 3 vegetation types were significantly different ($P<0.01$, $X^2=12.690$, d.f.$=2$); the highest number was recorded from the woodland and the least from the riverine grassland (Table 1). Abundance of tabanids in all vegetation types coincided with the warm rainy season, November–April, and the 9 species collected during the study were represented in all areas.

Table 1. Distribution of tabanids within the Chakwenga Game Reserve as determined by CO_2-baited Malaise trap collections.

Species	Miombo woodland		Headwater grassland or "dambo"		Riverine grassland	
	Trap I	Trap II	Trap I	Trap II	Trap I	Trap II
T. taeniola	307	228	430	187	313	255
T. sandersoni	66	99	74	39	45	15
T. coniformis	63	54	44	53	56	77
H. stimulans	54	27	7	69	43	4
H. pallidimarginata	249	147	170	162	278	149
H. distincta	225	21	114	88	43	10
H. perturbans	18	0	0	9	4	0
H. decora	21	0	0	7	69	27
H. hirsitutarsis	5	0	10	2	14	0
Sub-total	1008	576	849	616	855	537
Totals	1584		1465		1392	

The significant difference in the distribution of tabanids might have been partly determined by the distribution of host animals. During the rainy season, game animals move from the flooded riverine grasslands and dambos where they congregate during the dry season in search of water, to the woodlands which are more favorable. It is also likely that host distribution is often modified by the high dispersal rates of tabanids, a direct result of their powerful flight ability (Wigglesworth 1953). This might have accounted for the collection of all 9 species from all vegetation types.

The fact that all 9 species were not collected in each of 2 traps 300 m apart in any one vegetation type demonstrates the need for using more than one trap in tabanid surveys, particularly for species at low densities.

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